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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,285	08/27/2003	Avinoam Kornblit	18-14-12-2-5-1-16	5499
7590	01/26/2005		EXAMINER	
Docket Administrator (Room 3J-219) Lucent Technologies Inc. 101 Crawfords Corner Road Holmdel, NJ 07733-3030			VASUDEVA, AJAY	
			ART UNIT	PAPER NUMBER
			3617	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<i>Office Action Summary</i>	Application No.	Applicant(s)
	10/649,285	KORNBLIT ET AL.
	Examiner Ajay Vasudeva	Art Unit 3617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 15 November 2004.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-11 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- Friction between a surface and a fluid being controlled independently of a flow state of the fluid (emphasis provided), as set forth in claims 1 and 6.

Note: No new matter should be added.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification, as originally filed, in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1 and 11, applicants claim a mechanism to control friction between a surface and a fluid that is independent of a flow state of the fluid (emphasis added). However, the original disclosure fails to provide support for such limitation in the claim.

Further, it is noted that the instant invention is operative to alter friction by changing the degree of contact between the surface and the fluid. As long as there is any contact with the fluid, the flow state of the fluid adjacent the contact surface will change, however slight such

change might be. Therefore, it is not possible to control friction independently of the fluid flow state as long as such friction is determined by a degree of contact with the fluid.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Japan 2001-114185 A ('185).

JP ('185) shows a mechanism for changing friction between a fluid and a body surface [16] (figure 4), achieved by application of an electrical current. The body surface acts as an electrode (see *attached translation: col. 3, lines 3 and 16*), and comprises a conductive matter, such as carbon black disposed on the surface (col. 3, line 35). The mean particle diameter of carbon black is disclosed as 1 micrometer or less (col. 3, line 41). Therefore, the conductive matter like carbon black is considered equivalent to the recited nanostructure because it has a dimension less than one micrometer.

The friction would be influenced by the presence or absence of electric current applied to the conductive matter. Therefore, such friction is considered as being a function of surface energy of the nanostructure.

Further, regarding the newly added limitation “the friction being controlled independently of a flow state of the fluid”, applicants may note that the friction in JP ('185) is considered independent of the flow state of that portion of fluid that is not located in the proximity of the

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surface. In other words, the flow state of a fluid portion that is far from the surface will have no influence on the frictional interaction between the surface and its adjacently disposed fluid layer.

Although the change in resistance occurs by a process that is different from an electrically-induced penetration of fluid through the nanostructures for achieving a variable degree of contact with the surface, it is noted that such limitation has not been recited in the independent claims. However, inclusion of such limitation in the independent claims will overcome this rejection.

Re claim 2, the body surface is that of a marine hull. Although the hull is not completely disposed under water, the hull has at least a portion that is under a waterline.

Re claims 6, the steps claimed are inherent in the operation of the device described above.

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 6, 7, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 19704207 A1 ('207) in view of Japan 08-128413 A ('413).

DE ('207) shows a body surface [3] adapted to move through a fluid (figures 4 and 5), having a plurality of fibers [6] disposed in a pattern on the surface to control friction between the

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surface and the fluid. Specifically, the friction between the surface and the fluid is controlled by application of energy on the fibers that causes an ionization of water.

However, DE ('207) does not disclose the dimensions of the fibers.

JP ('413) teaches a reduction of friction experienced by a ship surface moving through a fluid (col. 1 of the attached translation; and figure 4). The ship has a plurality of fibers [61] disposed in a pattern on the surface to control friction. The fibers have a thickness of about 4.8 micrometers and a height of about 0.5 mm.

At the time of the invention, it would have been obvious for one skilled in the art to make the fibers of DE ('207) with a thickness of about 4.8 micrometers and a height of about 0.5 mm, as taught by JP ('413). Having such fiber dimensions would have ensured a reduction in friction not only when the electric current was applied to the fibers, but even when it was not possible to supply such current. The fibers are considered equivalent to the claimed microstructures because they have a dimension less than one millimeter.

Regarding Examiner's interpretation of the newly added limitation "the friction being controlled independently of a flow state of the fluid", please see ¶5 of this Office action.

Re claim 2, please see ¶5 of this Office action for Examiner's interpretation of the claim.

Re claim 5, although the change in resistance between the surface and the fluid is disclosed to occur by a process of fluid ionization, it is noted that a mere presence or absence of electric current on the fibers will also cause a variable penetration of fluid through the

microstructures for a different degree of contact with the surface, even though such has not been expressly stated in DE ('207). Such changing resistance will at least change the speed of the surface.

Re claims 6, 10 and 11, the steps claimed are inherent in the operation of the device described above.

#### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Allowable Subject Matter***

9. Claims 3, 4, 8 and 9 would be allowable if:

- the rejection(s) under 35 U.S.C. 112, first paragraph, is overcome, and.
- the claims are rewritten to include all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: JP 05-147572 A shows a mechanism for a reduction in friction by use of microscopic fibers.

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11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ajay Vasudeva whose telephone number is (703) 306-5992. The examiner can normally be reached on Monday-Friday 1:00 pm--5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, S. Joe Morano can be reached on (703) 308-0230. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ajay Vasudeva  
Examiner  
Art Unit 3617

  
AV

  
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